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### **REMARKS**

This application has been reconsidered carefully in light of the Office Action dated as mailed on 08 March 2002. A careful reconsideration of the application by the Examiner in light of the foregoing amendments and the following remarks is respectfully requested.

5                    This response is timely filed as it is accompanied by an appropriate Petition for Extension of Time for Filing of Response under Rule 1.136(a) and the associated fee.

                    There is no additional claim fee due for this Amendment because the total number of claims does not exceed the number of independent and dependent  
10                    claims for which fees have previously been paid.

### **Drawings**

In the interest of appropriately advancing the application towards issuance, formal drawings for the application are submitted herewith.

### **Amendment to the Claims**

15                    By the above, claim 13 has been amended to improve its form and to make more clear the invention which Applicant regards as his invention

Claims 2-9, 11-19 and 21-26 remain in the application.

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**Allowable Subject Matter**

As a preliminary matter, the undersigned wishes to thank Examiner Lum for the allowance of claim 24.

In addition, it is noted that claim 26 depends on claim 24. Further, while the outstanding Office Action has identified claim 26 as having been "rejected," the Action does not appear to include any rejection of claim 26.

In view of the above, claim 26 is also believed to be in condition for allowance and notification to that effect is solicited.

**Claims Rejection - 35 U.S.C. §112**

Claims 2-5 and 13-15 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for allegedly failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

By the above, claim 13 has been rewritten to ensure the provision of proper antecedent basis for the limitations appearing therein and to avoid the recitation of the subsequent phrase "and the discharge treatment element" which had been found by the Examiner to be "unclear/redundant within the context of the preceding recitation."

In view thereof, the indefiniteness grounds of rejection are believed to overcome and notification to that effect is solicited.

## **Prior Art Rejections**

### **Claims Rejection - 35 U.S.C. §103(a)**

1. Claims 7 and 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,482,9315 to Chandler Jr. et al. (hereinafter “Chandler”).

The Action alleges that Chandler discloses an “inflator 10 comprising [an] elongated hollow tubular/arcuate member 50 with [an] elongated supply of gas generant material (Col 2, lines 15-16), the member including gas orifices 46.” The Action further alleges that “It would have been obvious to one with ordinary skill in the art at the time the invention was made to include a range of sizes of member towards adaptation to different applications/vehicle dimensions.”

Such rejections are respectfully traversed.

It is noted that both Chandler and the subject application are commonly assigned. Further, Chandler was included in the art originally cited in the Information Disclosure Statement which accompanied the subject application on its filing and was considered in the preparation of the subject application.

Claim 7 requires an inflator comprising:

an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a

portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member, wherein the elongated hollow tubular member is arcuate.

5                   Such an inflator is neither shown nor suggested by Chandler.

                  As stated in Chandler, the invention thereof "is a hybrid (augmented) stored gas inflator 10 for air bag restraint systems. The inflator 10 comprises an elongated slender tubular shaped cylinder 50 for storing inert gas such as argon or nitrogen under high pressure, for example at 2000 to 4000 psi." (See Chandler, col. 10 2, lines 12-17, emphasis added.)

                  Thus, it is clear that the tubular shaped cylinder of Chandler stores or contains an inert, pressurized gas as compared to an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, as claimed. In this regards it is noted that the subject application specifically discusses problems (e.g., uniform 15 ignitability) and limitations on or with pyrotechnic inflators and that such inflators commonly have an L/D ratio of no more than about 7. Claim 7 requires that the claimed inflator contain an "elongated supply of **pyrotechnic** gas generant material" not merely an elongated supply of gas generant material.

                  Claim 7 also requires that the elongated hollow tubular member be 20 arcuate. Arcuate elongated tubular members are identified and specifically disclosed, described and discussed at various locations in the specification. For example, the invention practice or use of inflator having an arcuate form or profile is specifically

identified at page, 15, lines 6-9; page 22, lines 4-10 and page 22, line 19 through page 23, line 4 and shown in FIGS. 6 and 7, for example. Such an arcuate elongated hollow tubular member is nowhere shown or suggested by Chandler.

5 As stated in the previously provided definition of the term "arcuate" appearing in The American Heritage Dictionary of the English Language, Houghton Mifflin Company, 1981, arcuate means "having the form of a bow; curved; arched." Again, such an arcuate elongated hollow tubular member is nowhere shown or suggested by Chandler.

10 Further, claim 7 requires the inflator include "a plurality of **longitudinally-spaced apart** gas exit orifices." While Chandler has been cited in the Action as disclosing gas orifices 46, Chandler fails to show or suggest the inclusion of "a plurality of **longitudinally-spaced apart** gas exit orifices" as required by claim 7.

15 Still further, claim 7 requires that the tubular member of the inflator thereof have a length to diameter ratio **greater than 20**. As acknowledged in the Action, Chandler discloses that the cylinder thereof has an L/D ratio greater than 10. Chandler does not show or suggest the incorporation and use of a cylinder having an L/D ratio greater than 20, as claimed.

Claim 8 requires an inflation assembly comprising:

5 an inflator comprising an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member and

10 an elongated diffuser device secured adjacent the inflator for directing at least a portion of gas expelled from the inflator into an associated inflatable device.

15 Thus, claim 8, similar to claim 7, requires an inflator comprising an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member.

20 As submitted above, Chandler fails to show or suggest such an inflator. In particular, Chandler fails to show or suggest an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater

than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member.

5           Claim 8 further requires the inclusion of an elongated diffuser device secured adjacent the inflator for directing at least a portion of gas expelled from the inflator into an associated inflatable device. While Chandler discloses the inclusion of a diffuser chamber 44, it is respectfully submitted that Chandler fails to show or suggest the inclusion of "an elongated diffuser device secured adjacent the inflator for directing at least a portion of gas expelled from the inflator into an associated  
10           inflatable device", as specifically claimed.

          In view thereof, claims 7 and 8 are believed patentable over the art of record and notification to that effect is solicited.

2.           Claims 9, 11-13, 15-19, 21, 23 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chandler in view of U.S. Patent 6,145,876 to  
15           Hamilton (hereinafter "Hamilton").

          Such rejections are respectfully traversed.

Claim 9 depends on claim 8. As stated above, claim 8 is believed patentable over Chandler as, for example, claim 8 requires “an inflator comprising an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular member” and also requires “an elongated diffuser device secured adjacent the inflator for directing at least a portion of gas expelled from the inflator into an associated inflatable device.” As such shortcomings of Chandler are not overcome by the further proposed combination of Hamilton therewith, so then claim 9 is also believed patentable over the combination of Chandler and Hamilton and notification to that effect is solicited.

It is also respectfully noted that while claim 12 has been listed as included in the claims under this grounds of rejection, no mention has been made of the limitations of claim 12 or the satisfaction of such limitations by the proposed combination of prior art references. Claim 12 is dependent on claim 11 and further requires that the elongated hollow tubular member be arcuate. As such limitation has



neither been alleged to be shown or suggested by the proposed combination of Chandler and Hamilton nor is in fact shown or suggested by such proposed combination of Chandler and Hamilton, claim 12 is believed patentable over the art of record and notification to that effect is solicited.

5                   With regard to claims 11, 13, 15-19, 21, 23 and 25 the Action states that Chandler does not disclose a deformable discharge element, while Hamilton shows elongated discharge element 100 which deforms to create spaced gas flow paths. The Action alleges that it would have been oblivious to one of ordinary skill in the art at the time the invention was made to include this element to further minimize initial  
10                   inflation pressure, thus minimizing injury to the occupant from very abrupt inflation.

                  Claim 13 requires an inflation assembly comprising:

                  an inflator comprising an elongated hollow tubular member containing an elongated supply of pyrotechnic gas generant  
15                   material reactable to produce a supply of gas, the tubular member having a length to diameter ratio greater than 20 and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough at least a portion of the supply of gas provided by reaction of the pyrotechnic gas generant material can be expelled from the tubular  
20                   member and

                  an elongated discharge treatment element secured with the inflator at selected positions along the respective lengths of the inflator and the discharge treatment element, the discharge treatment element effective to treat at least a portion of the gas expelled from the  
25                   inflator contacting thereagainst and to deform to create spaced apart gas flow paths between the inflator and the treatment element, the gas flow paths spaced apart along the respective lengths of the inflator and the treatment element, the treatment element also directing at least a

portion of gas expelled from the inflator into an associated inflatable device.

5 As submitted above, an inflation assembly including such an inflator is neither shown nor suggested by Chandler. Thus, the combination of discharge element 100 of Hamilton to the inflator of Chandler fails to render obvious the claimed invention.

In view thereof, claim 13 is believed allowable over the prior art of record and notification to that effect is solicited.

10 Claims 11, 15 and 25 each depends on claim 13 with claim 25 further requiring that the elongated hollow tubular member be arcuate. As claim 13 is believed allowable over the art of record, these claims are also believed allowable over the art of record and notification to that effect is solicited. Claim 25 is believed further patentable over the proposed combination in view of the requirement thereof  
15 that the elongated hollow tubular member be arcuate.

Independent claim 16 requires "an elongated inflator adapted to provide a gas-containing discharge through selected locations spaced along the length of the inflator." Independent claim 21 is directed to a method of inflating an inflatable device and requires, "expelling at least a portion of the supply of gas through selected  
20 locations spaced along the length of the inflator."

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As submitted above, Chandler fails to show or suggest an inflator which discharges or expels gas at selected locations spaced along the length of the inflator. Further, as the inflator device of Chandler uses the cylinder 50 to store a pressurized gas, modification of such cylinder to provide for the discharge or expulsion of gas along the length thereof is nowhere shown or suggested in the prior art.

In view thereof, claims 16 and 21 are believed allowable over the prior art of record and notification to that effect is solicited.

Claims 17-19 depend, directly or indirectly, on claim 16 while claim 23 depends on claim 21. As these underlying claims are believed patentable over the prior art of record, so to are these claims dependent thereon also believed patentable over the prior art of record. In addition it is noted that claim 18 requires the hollow tubular member be arcuate. As an arcuate tubular member is not believed shown or suggest by Chandler or Hamilton either alone or in combination, such claim is believed further patentable over the prior art of record.

3. Claims 2, 4 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chandler in view of Hamilton and further in view of U.S. Patent 5,845,933 to Walker et al. (hereinafter "Walker").

Regarding claims 2 and 4, the Action while acknowledging that Chandler and Hamilton fail to disclose the gas generant material as including annular-shaped grains, states that Walker shows this arrangement in FIG. 1 with grains 56 and that it would have been obvious to one with ordinary skill in the art at the time the invention was made to include this material as an alternative arrangement having two types of gas generant material for special applications.

Such rejections are respectfully traversed.

Claim 2 depends directly on claim 13 and requires that at least a portion of the supply of pyrotechnic gas generant material comprise a plurality of cylindrical annular-shaped grains axially aligned end to end along the length of the tubular member. Claim 4 depends directly on claim 2 and requires that the cylindrical annular-shaped grains form an internal cavity longitudinally extending substantially through the supply of pyrotechnic gas generant material, the inflator additionally comprising an elongated ignition article extending within the internal cavity.

As submitted above, Chandler employs the cylinder 50 to store a pressurized gas. Modification of the inflator device of Chandler to store or contain an elongated supply of pyrotechnic gas generant material reactable to produce a supply of gas, as specifically required by claim 13, is nowhere shown or suggested by the prior art. In view thereof, the further proposed modification to include a plurality

of cylindrical annular-shaped grains axially aligned end to end along the length of the tubular member, as required by claim 2, is not supported by the prior art.

Also, the still further proposed modification to include an elongated ignition article extending within an internal cavity longitudinally extending substantially through the cylindrical annular-shaped grains, as required by claim 4, is not supported by the prior art.

Regarding claim 14, claim 14 is dependent on claim 13 and requires that the inflation assembly of claim 13 also include a filter element interposed between the inflator and the discharge treatment element.

As the shortcoming of the proposed combination of Chandler and Hamilton relative to showing or suggesting the limitations of claim 13 are not overcome by the further proposed combination of Walker therewith, claim 14 dependent on claim 13 is also believed patentable over the prior art of record and notification to that effect is solicited.

4. Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Chandler in view of Hamilton and further in view of U.S. Patent 6,068,290 to Sheng (hereinafter "Sheng").

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5. Claims 5 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chandler in view of Hamilton and further in view of U.S. Patent 5,551,724 to Armstrong III et al. (hereinafter "Armstrong").

5 Claims 3, 5 and 6 each depend directly or indirectly on claim 13. As the shortcomings of the proposed combination of Chandler and Hamilton relative to claim 13 are not believed overcome by the further proposed combination of either Sheng or Armstrong therewith, these claims are believed allowable over the prior art of record and notification to that effect is solicited.

6. Claim 22 was rejected under 35 U.S.C. §103(a) as being unpatentable over Chandler in view of Hamilton and further in view of U.S. Patent 4,158,696 to Wilhelm III et al. (hereinafter "Wilhelm").

5 Claim 22 depends on claim 21. As the shortcomings of the proposed combination of Chandler and Hamilton relative to claim 21 are not believed overcome by the further proposed combination of either Wilhelm therewith, claim 22 is believed allowable over the prior art of record and notification to that effect is solicited.

### **Conclusion**

10 It is believed that the above Amendment places all pending claims in condition for allowance and notification to that effect is solicited. However, should

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the Examiner detect any remaining issue or have any question, the Examiner is kindly requested to contact the undersigned, preferably by telephone, in an effort to expedite examination of the application.

Respectfully submitted,



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Claims:**

1                   13.    (Twice Amended)  An inflation assembly comprising:  
2                   an inflator comprising an elongated hollow tubular member containing  
3                   an elongated supply of pyrotechnic gas generant material reactable to produce a  
4                   supply of gas, the tubular member having a length to diameter ratio greater than 20  
5                   and including a plurality of longitudinally-spaced apart gas exit orifices wherethrough  
6                   at least a portion of the supply of gas provided by reaction of the pyrotechnic gas  
7                   generant material can be expelled from the tubular member and  
8                   an elongated discharge treatment element having a length and secured  
9                   with the [inflator] tubular member at selected positions along the [respective lengths  
10                  of the inflator and the discharge treatment element] length of the tubular member, the  
11                  discharge treatment element effective to treat at least a portion of the gas expelled  
12                  from the [inflator] tubular member contacting thereagainst and to deform to create  
13                  spaced apart gas flow paths between the [inflator] tubular member and the treatment  
14                  element, the gas flow paths spaced apart along the [respective lengths of the inflator]  
15                  length of the tubular member and the length of the treatment element, the treatment  
16                  element also directing at least a portion of gas expelled from the [inflator] tubular  
17                  member into an associated inflatable device.